The next cyclic hot spot looms

Regional fab capacity usage rates are closing in on 90%, and the chip industry's reluctance to add capacity means a capacity crunch is imminent, warns VLSI Research Inc, the San Jose-based market research company predicted that most areas of the world reached 90% capacity utilisation rates or higher in September.

In Japan and Taiwan utilisation rates climbed to 88 % in August, followed by the United States at 87%, Europe 86% and Korea, 81%. The rest of the world's fabs were at 86% capacity in August, according to VLSI.

When capacity usage rates reach 85% percent, historically the industry has added capacity, sparking activity along the industry supply chain. But that is not currently happening.

"What is amazing about this data is how uniformly high it is, yet the industry is pretty nonchalant about expanding," says Dan Hutcheson, VLSI president, "The IDMs are largely expecting the foundries to pick up the slack, but the foundries don't want a repeat of the 2000 bubble, so they are holding back."

With the possible exception of back-end assembly and test equipment at Asian subcontractors, Asia, including Taiwan, seems to be underinvesting in fab equipment. "It is fairly safe to say that the foundries' current spending levels will not allow them to gain share," Hutcheson said. "There are one to two dozen fabs on the books in China, but these are still paper dragons," he continued. "It takes equipment to make real capacity and this is not happening."

Constrained capacity all along the semiconductor supply chain, constrains implementing long-term plans.

The stock market expects earnings, so in an environment where the top line can't be raised companies concentrate on beating down their suppliers, he noted.

"Meanwhile, future supply problems are just that: in the future. This is how our industry's crazy cycles are driven. It's not that they cannot be predicted, it's that we are driven to repeat them," he concludes.

US and European jobs migrate

US private sector experts are estimating that 15% of the 2.81m jobs lost in the American decline have reappeared overseas, with estimates suggesting that this has been enough to raise unemployment by around half a percent. Further, work sent abroad has moved from labour intensive manufacturing and call centre abilities to include skilled work such as aeronautical engineering, software design and stock analysis from China, Russia and India, with their educated workers, rapidly merging into the global labour market says a *New York Times* article.

Trade-off in jobs may not be one for one, but given low wages, the total saving for a US company can be as much 50% for each job shifted, even allowing for transportation, communication and other expenses.

The job loss figures range from 995,000 jobs lost since March 2001 (35% of the total decline in employment) to 500,000 or 600,000 jover the past 30 months.

John McCarthy, research analyst at Forrester Research Inc is even projecting forward. From January 2000 to 2015, globalisation of American production will have eliminated 3.3m jobs at home, he estimates.

Europe has less of a handle on such figures. But recent proposals to force its chemicals industry to test a minimum of 30,000 substances for toxicity could result in up to 2m job losses, with thousands of jobs exported to the Far East, the chemicals industry has warned.

While more than 111,000 manufacturing jobs are expected to be lost in the UK this year, the electronics and electrical engineering sector contribute 24,000 of those, according to Cambridge Econometrics.

In its *Regional Economic Propects* report, employment in Scotland is expected to fall sharply in 2003 with the report predicting a loss of 32,000 jobs. "Following a sharp decline in manufacturing output in 2002, estimated at more than 8%, a further decline of almost 1% is forecast for 2003.

Weakened demand for electronics has affected Scottish production, and it is "far from certain that Scotland will continue to attract the scale of investment it has seen in the past," notes the report.

Markets & Business

Semiconductor R&D only dips

Technology hardware & equipment firms such as Sun Microsystems Inc and Cisco Systems Inc had significant declines in both R&D and sales in 2002. But although the semiconductors & semiconductor equipment sector had a steep decline in sales of 8.5%, its R&D dipped only 1.1%.

IEEE Spectrum's Top 100 R&D Spenders

Manufacture jumps boundaries

"Lowest-cost manufacturing historically has jumped political boundaries. In the 1970s it was in Japan, in the 1980s and 1990s it moved to Korea and Taiwan, and now it is rooted in China. With 400,000 engineers graduating each year from Chinese universities, versus about 100,000 in the United States, that's a lot of excess brain power and training, not to mention internal competition, to throw at a problem.

"There is an incredible sucking sound of PCB manufacturing moving from North America to China," said Leigh Eichel, marketing manager for high-performance circuits at Teradyne. "The Chinese currency doesn't float so their labour rates are artificially low. The big question is whether they can take that incredible cost advantage and sustain it long enough so that other companies can't survive."

China is betting it can. And it's betting that boards built within its political borders will serve the indigenous market, which is expected to explode as pay scales rise and residents begin demanding consumer electronics. *PCB Battle Goes Global.* By Ed Sperling . *Electronic News*